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United States Environmental Protection Agency
Region V
POLLUTION REPORT

EPA Region 5 Records Ctr.
263810

Date: Tuesday, September 19, 2006
From: Kevin Turner, OSC

Subject: Pine Lake Sediment Removal
Collinsville, IL
Latitude: 38.6911
Longitude: -89.9597

POLREP No.:	1	**Site #:**	
Reporting Period:	(Final POLREP)	**D.O. #:**	
Start Date:	7/11/2006	**Response Authority:**	CERCLA
Mob Date:	7/11/2006	**Response Type:**	Time-Critical
Completion Date:	9/22/2006	**NPL Status:**	Non NPL
CERCLIS ID #:		**Incident Category:**	Removal Action
RCRIS ID #:		**Contract #**	

Site Description

1. Location

The former St. Louis Smelting and Refining Site (a.k.a Pine Lake Sediment Site) is located within the city boundaries of Collinsville, Madison County, Illinois. Pine Lake is located east of Route 159 and north of Pine Lake Road. Property uses within the area are single family residential. Residential property lot size are less than on acre with a few exceptions. Homes in the area range from approximately 90 years old to less than 1 year in age. Homes in the area receive potable water through a public water supply system.

Surface water runoff from residential properties adjacent to Pine Lake is channeled into the lake. The south shore of Pine Lake is dammed and bounded by Pine Lake Road. The dam has a culvert that allows water in Pine Lake to drain under the road during high-water periods. After flowing under Pine Lake Road, drainage from Pine Lake flows south-southwest into the lakes in Woodland Park. Residents of the Pine Lake Subdivision surrounding Pine Lake own the water body and small portions of adjacent property. Pine Lake is used for recreational fishing throughout the year and swimming during warmer months.

2. Description of threat

Pine Lake is located on the former St. Louis Smelting and Refining Company property. Illinois EPA has documented the presence of lead in sediments above health standards. The health concerns at this Site are related to the fact that residents live around and use Pine Lake, potentially exposing young children, pregnant women and elderly individuals to contamination.

The effects of lead exposure are more severe for young children and the developing fetus through exposure to a pregnant woman. The harmful effects of lead include premature births, lower birth weight, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. In adults, lead increases blood pressure, induces anemia as a result of the inhibition of

hemoglobin synthesis, decreases reaction time, affects memory, and damages the male reproductive system. Lead is also considered by U.S. EPA to be a class B2 or probable human carcinogen. Toxicity information is summarized in the references, ATSDR, 1993 and U.S. EPA, 2000.

The highest concentration of lead was over 86,000 ppm within the lake sediments. In addition, the Illinois Department of Public Health recommends that remediation efforts be initiated on the basis of the high levels of lead found in the sediment soils and based upon the likelihood of sensitive populations (i.e. children) being exposed to lead. Since the neurological effects on young children and the developing are considered to be irreversible, even short term exposures to elevated lead levels are of a public health concern.

3. Site background

Historic maps and records indicate the smelting facility's main operations were situated on approximately 24 acres to the east of Pine Lake just north of Pine Lake Road. Although lead-smelting activities ceased sometime around 1933, residential development on and around the former smelter progressed over many years and in separate phases since the 1950's. Those same residential developments exist to this day.

The St. Louis Smelting and Refining Company operated a lead smelting facility from 1904 until November 1933. At peak production, the facility employed 425 men. At the time of operation, the facility was located northeast of Collinsville, Illinois. Since that time, Collinsville has expanded to the area surrounding the facility and as indicated by historical aerial photographs, in the 1950's and 1960's residential homes began to be built on the property. The plant closed in November 1933, following a strike for higher wages and shorter hours (Stehman). Following plant closure, equipment from the facility was shipped to South America (Stehman). The actual date when the facility was dismantled is unknown, however, aerial photographs from 1941 indicate that only two buildings remained intact. The aerial photographs show primarily foundations, rubble, a general lack of vegetation and a large slag pile where the unnamed pond at the end of Pine Lake Road is now located.

A plat map of Madison County from 1917 indicated that at one time, St. Louis Smelting owned up to 482 acres, however, it is generally believed that refining activities occurred on approximately 40 acres. Through various data collection activities, it is now believed that the area affected with elevated levels of lead may total approximately 148 acres. Residential development in the area directly north and south of Pine Lake began in the 1950's as evidenced by historical aerial photographs. Residential development to the east of Pine Lake in what is now called Collinwood Subdivision began in the mid-to-late 1970's. Residential development in the area has progressed in phases and building currently continues on the last empty lots.

4. State and local actions to date

In November of 2001, the Pine Lake Homeowners Association were considering dredging the three northern fingers on Pine Lake and collected samples from each finger. Those results indicated that local disposition of the silt materials would be regulated as a hazardous waste as all three-sample results were above the 5.0 mg/L regulatory standard.

On March 6 - 8, 2002, IEPA conducted an x-ray fluorescence (XRF) field-based soil and lake

sediment screening effort from surface soils located at 6, 12, 24, and 30 inches below ground surface and at various depths from lake sediments. Sample concentrations ranged from below 400 mg/kg to as high as 4988 mg/kg.

On July 29, 2002, IEPA conducted an expanded site investigation (ESI) for additional soil and sediment sampling. Lead concentrations in soil ranged from 52.8 mg/kg to 35,900 mg/kg.. Information obtained during the ESI identified contaminated residential soil that is considered a "source" area of contamination at the St. Louis Smelting and Refining Site.

Current Activities

- The Pine Lake Homeowner's Association on April 10, 2006 granted access to Pine Lake.
- Pine Lake was dewatered to approximately 5.5 to 6 ft below the outlet structure located on the south side of the lake.
- Test pit sampling was performed during the week of July 17, 2006. Thirty-nine test pits were sampled. Samples were collected from depths in each test pit (0-6", 6-12" 12-18' and 18-24".
- Following dewatering, the southern bank of Pine Lake was reinforced with rip-rap.
- Erosion and sediment controls were installed around the dewatered portions of the lake. These included diversion piping, silt fence and emergency pumps.
- XRF to analytical correlations were submitted for use during screening and confirmation sampling.
- Grids 1-11, 13-21, 25, 27-31, 33-36, and 39 were excavated at various depths.
- Approximately 5000 cubic yards (7000 tons) of lead contaminated sediments were excavated from Pine Lake and disposed of in a local landfill.
- 1300 tons of lead contaminated sediments were treated with a phosphate-based compound to bind the leachable lead.
- 1000 tons of backfill were brought in to stabilize the banks of Pine Lake.

Planned Removal Actions

No work is planned as project activities were completed on September 22, 2006.

Next Steps

None

Key Issues

NL Industries and the U.S. EPA signed an Administrative Order on Consent (AOC) on May 18, 2006. The AOC became effective on May 19, 2006.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
Intramural Costs				
Total Site Costs	$0.00	$0.00	$0.00	0.00%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

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